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BUREAU of
RADIOLOGICAL HEALTH
Seminar Program

# LEGAL LIABILITY and RECOURSE for RADIATION INJURY

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# SELECTED PAPERS from the BUREAU OF RADIOLOGICAL HEALTH SEMINAR PROGRAM

The Bureau of Radiological Health (BRH) Seminar Program is an outgrowth of several seminar program efforts conducted within the Bureau. The X-Ray Exposure Control Laboratory (XECL), the Radiation Bio-Effects Program, and the Research Grants Section had each established effective programs for the purpose of disseminating information. In 1968 these programs were combined into the Bureau of Radiological Health Seminar Program to encompass the total range of radiological health activities engaged in by the BRH.

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# LEGAL LIABILITY AND RECOURSE FOR RADIATION INJURY[1]

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Radiation is dangerous, as are many things we touch, eat, drink, and do. With our ever-increasing reliance upon ionizing radiation in many forms, it is inevitable that individuals will be injured, or at least think they have been injured . . . a problem of equally serious proportions.

It is important to distinguish between danger, risk, and injury. *Danger* is the possibility of injury. Danger, the possibility of injury, is inherent in the agent. If the agent is accepted, no fault is attached to the existence of the danger. *Risk* is the probability of injury. This is the responsibility of the one who controls the agent. What constitutes a reasonable risk is often, but not always, guided by custom in the field. Fault attaches when risk, or the probability of injury, exceeds some acceptable level. It should be observed that the existence of danger and the existence of risk do not consititue injury. *Injury* is the actuality and must be identified and proved separately. This distinction may be important in the area of radiation injury where the radiation as a danger and a risk is provable, but the injury itself is not.

In accepting, rather than prohibiting, the dangers that range from autos to bath tubs and from drugs to radiation, society seeks to minimize the risk or to compensate for injury by legislation, regulation, or resort to courts of law. Agencies are created and authorized by legislation to establish rules and regulations to govern the dangerous activity or agent. Then authority to enforce such rules and regulations is added: "Any person who willfully violates any provision of the act or any regulation or order issued thereunder may be guilty of a crime, and upon conviction, may be punished by fine or imprisonment or both, as provided by law." This is the preventive function of law.

Should injury occur, then it is a function of law to compensate the injured party, particularly if another is at fault or if society has some continuing benefit from the agent or activity that inflicted injury upon the individual. Such function is served by civil courts or by the device of workmen's compensation. Inherent in the mechanism for providing compensation to an injured party is the need for fairness and protection to the other party to the suit. The injury must be proved and the liability established in accordance with well-defined rules of law.

In the area of legislation and regulation, the average individual may be at some handicap to cope with the problems involved in locating, reading interpreting, and complying with the rules of law; nevertheless, they do exist in explicit writing. It is indeed true that ignorance is no excuse and there is no alternative to familiarity with regulations governing one's chosen area of activity, utilizing whatever assistance may be required.

The area of compensation for injury has its basis in tort law. *Torts*, the subject, is the study of the extent of individual rights, wants, and desires, which are so far recognized by the law that he who interferes with their realization shall be liable. Tort, the offense, is an injury resulting from a violation of a duty which one individual owes to another. A tort may be intentional as in the case of assault, battery, or interference with peace of mind. It may be unintentional and this is negligence. Under the rules of common law that govern in a civil suit a rather precise set of checks and balances exists. The plaintiff's injury must be proved. There must be an act on the part of the defendant. The act must be proved to have caused the injury. In the case of an unintended injury, the breach of a recognized duty be-

[1]This paper was presented as a part of the X-Ray Exposure Control Laboratory's (National Center for Radiological Health) Seminar Program on October 7, 1966 in Rockville, Maryland.

tween parties to avoid such injury must be shown.

The factors of cost, uncertainty, and protraction, that mark the course of litigation in civil courts worked greatly to the disadvantage of a workman seeking damages as a result of injury sustained in the course of his employment. As a result, workmen's compensation legislation arose with the intent of minimizing cost and delay by requiring only that the injury be proved to exist and that it was incurred in the course of occupation. "The philosophy of the Workmen's Compensation Act is that the product pay its own way and that the human material consumed in its manufacture be purchased with the same coin as the coal and iron ore going into its production." (*1*)

Within this framework of legal action, briefly described, radiation presents some distinctive complications to achieving the simple purpose of the law . . . the compensation of an injured party.

First is the problem of proving the injury. Of course there are such obvious and acute radiation injuries that no unique problem presents itself, but short of massive exposure, the effects of radiation are nonspecific or may be much delayed. Nausea, vomiting and diarrhea, leukopenia, depilation, cataracts, aging, and cancer are known effects of radiation, but they also occur due to other causes or spontaneously. There is no specific feature by which radiation injury may be recognized. The problem of proof is doubly difficult; it is difficult or impossible to prove, but also difficult or impossible to disprove, that a given effect is the result of radiation exposure.

The problem is expanded by the trend where courts are willing to recognize interference with peace of mind as a compensable tort. Where a patient suffered a radiation burn in the course of treatment and then developed fear that cancer might occur in the injured tissues, the court allowed separate damages for the injury itself and for the cancerophobia. (*2*) This is a reasonable enough development, but when no physical injury is shown or claimed, and when fear is based on ignorance or misinformation, the reasoning in law may seem strained. "Mental distress caused by fear of harm to their unborn children has been held to be a proper item of damages in cases involving injuries to pregnant women. Recovery is for damage to the mother herself during the period of pregnancy and is not dependent upon the right of the fetus or embryo to recovery. The apprehension of a pregnant women that her unborn child might be injured is a proper element of damages even though it is established at the trial that such apprehension was unfounded or groundless and that plaintiff in fact gave birth to a normal uninjured child. Medical testimony to show that the feared result would probably follow from the injury is not necessary in order for the pregnant woman to recover . . . . . the existence of this mental anguish is not disproved by evidence that if the plaintiff had been thoroughly versed in medical science she would have known that her fears were groundless; recovery is allowable if the fears are based on data that is commonly believed by the general public." (*3*)

The landmark case in radiation injury litigation is that of McVey and Northway v. Phillips. (*4*) The case demonstrates in a text book fashion the kind of problem that may be expected when radiation injury comes to court. The accident involved contamination occurring in the course of manipulation of a cartridge containing iridium-aluminum sources that had been activated in a reactor operated by the Phillips Petroleum Company. The injuries claimed by McVey were persistent nausea and vomiting, a burn on the third finger of his right hand, too tired and weak to work, diminished sexual activity, sterilized to avoid mutations, cataracts, and aleukemic leukemia. Northway complained of nausea and vomiting, persistent diarrhea, burns of the skin of the umbilicus, penis and scrotum, being too tired and weak

to work, sexual impotence, cataracts, and a bladder tumor.

The first recourse of both men was workmen's compensation. McVey was granted an award of $5,250, but Northway's claim was denied. After this action, the employees could have no further claim against their employer, but they were entitled to seek damages by a "third-party suit" against anyone whose negligence might have contributed to their injury. Suit was, therefore, brought against the Phillips Petroleum Company and the accident is presented in vivid terms in the plaintiffs' brief:

> **"After so irradiating such pellets, defendant Phillips Petroleum Company caused the canister containing said pellets to be shipped to the South Houston Laboratories of M. W. Kellogg Company in Harris County, Texas, where the aforedescribed container was cut open by means of a lathe in the laboratories of the said M. W. Kellogg Company and thereafter the cap and core of such container were in the process of being removed when suddenly, and without any warning whatever, two of the highly radioactive pellets disintegrated into powdery dust-like particles, exploded from the core of the container, unleashing huge quantities of radioactive particles which projected themselves throughout the laboratory emitting literally hundreds of billions of electrons and gamma rays which traveled at a speed of approximately 186,000 miles per second, said electrons and gamma rays bombarding and piercing the head, face, and body of your plaintiffs, attacking their vital organs and inflicting upon them the severe injuries described hereinafter in greater detail."** *(5)*

This description is quoted for consideration in the light of the legal position mentioned above, that is ". . . recovery is allowable if the fears are based on data that is scientifically untrue, if such data is commonly believed by the general public." The legal facts of the case may have to be dealt with at the level of the lowest common denominator. The spokesman for science, both in and out of court, has a commitment to educate the public, if only in self-defense.

The plaintiffs, Northway and McVey, lost their case in the trial court, and the verdict was affirmed on appeal. (*4*) Their claims were based upon alleged injuries which the jury found unconvincing. The report of the proceedings before the court of appeals illustrates the problems of a suit based on alleged radiation injury. (*4*) A third party suit would be carried out under the rules of common law described above without the advantages of an action under workmen's compensation rules. They must prove their injury, prove the act of the defendant and that the act of the defendant caused the injury, and show the elements of negligence. Against such charge, the defenses of contributory negligence and assumption of risk are available.

Although there is reference to "injuries" and even to "severe injuries," no single word of documentation or description enters this record. A series of witnesses testified to the lack of evidence of radiation injury in either man. Much evidence was reviewed concerning the accident, the radiation exposure, the danger or possibility of injury, and the risk or probability of injury. This is an example of an attempt to substitute elaborate documentation of danger and risk for the essential requirement of proof of injury.

The case also illustrates the broad problem of causation, the relation of a specific act or accident to a specific injury. The plaintiffs' complaint alleged only one massive exposure on March 13, 1957, as the direct and proximate cause of their injuries. This was necessary since the liability of Phillips would be based solely upon injuries resulting from the specific accident caused by their alleged negligence. It would be difficult to prove, or

disprove, that the nonspecific complaints described were due to radiation at all. It would be even more difficult to prove or disprove that such injuries were due to radiation received on March 13, 1957, and not, wholly or in part, as a result of an incident on some other date.

That their physical injuries were at least not life threatening was upheld by a story in the Houston Post seven years later. The headline read: "City's First Radiation Casualties Still Nurse Ills." An enterprising reporter had located Northway in Canada and McVey in California. There had been no apparent progress of their alleged injuries, but both men had complaints which they dated from the time of the accident. "I'm still going to a doctor three or four times a month and taking antibiotics for this kidney and bladder infection," Northway said. McVey said he still has a numbness of the legs which seems to defy treatment. Both men though, added that they were glad to be alive. "I'm going to live until I die," McVey said.

If the jury found the alleged injuries of Northway and McVey unconvincing and, if time had failed to add substance to their claims, it is evident that their lives have been shaped by the radiation incident, and this might well be seen as interference with their peace of mind. Had they presented their injury as mental anguish, the court might have recognized this as a compensable tort.

The more recent case of Besner v. Kidde is that of a physicist who died of acute myeloblastic leukemia, first diagnosed one year after he was employed. (*6*) The radiation exposure was minimal. He did not handle radioactive material, but worked at a desk 200 feet from a laboratory where there were 201 millicurie and 1 millicurie $^{60}Co$ sources. When the sources were in use, the laboratory had radiation levels of 6 - 10 milliroentgens per hour. (*7*) The decision confirmed the award of workmen's compensation stating:

"The testimony of the medical experts is emphatic that there is really no threshold or safe dose because, at the present stage of scientific knowledge, it cannot be ascertained exactly what effects radiation has on the human body. It is also admitted that each individual reacts differently to exposure to radiation. The award is supported by substantial evidence and by the presumptions." (*6*)

As compared with Northway and McVey v. Phillips Petroleum Company, which was a third party suit, Besner v. Kidde is a workmen's compensation action. The injury complained of was fatal leukemia. The dangerous agent, radiation, was present and, if scientific opinion would consider the risk as small or even negligible, the philosophy of workmen's compensation considers possibility rather than probability. The presumptions referred to represent a legal device for decision. As applied here, a disease in a worker in a radiation occupation, with *no* known exposure, would be presumed to be the result of radiation until proved otherwise. This is the *rebuttable presumption*. If the worker had ever been exposed to radiation, then the disease would be conclusively presumed to be due to radiation. This is the *non rebuttable presumption*. Since it is equally impossible to disprove, as to prove, that such a leukemia is due to radiation, the result is to allow compensation to any worker in the radiation industry who has a disease conceivably due to radiation. As O'Toole has commented, proof of alleged delayed radiation injury invites investigation into complicated medical and scientific issues, as is illustrated by this court's reliance on threshold dose. (*8*) Further, a welfare approach to disability may yield inviting economies of time and administration.

## SUMMARY

The rules of common law and workmen's compensation establish the basis for liability for personal injury and govern recovery of compensation in suits involving the many types of dangerous agents and conducts that man continues to devise. As new activities occur, some adjustment or extension of principle and application of law is brought about. The advent of ionizing radiation and its increasing permeation of our daily activities, particularly in industry and medicine, is likely to have far-reaching social and legal, as well as biological effects.

Radiation injury strains the application of existing rules of law because of the difficulty of proving injury, establishing causation, and extending the concept of the statute of limitations to deal with such delayed effects. The difficulty is greater for the scientist with his uncompromising requirements for proof, but he must realize that social legislation and legal principles will have at least equal weight in achieving today's solution for today's problems. Lacking a final, or even satisfactory answer, whether scientific, legal, or social, we still must present our "best" answers to get the best decisions for today. The responsibility of medicine and science is to know enough of law to know what is expected of us and what to expect for ourselves when we come to court. We must be ready and willing to offer the court our assistance as expert witnesses so that sound precedents may be established.

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